WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

metal interconnects made from a multi-layer film composed of a first metal film deposited on a semiconductor substrate with an insulating film sandwiched therebetween and a second metal film deposited on said first metal film;

an interlayer insulating film formed on said metal interconnects; and

a plug made from a third metal film selectively grown on said second metal film within a via hole formed in said interlayer insulating film.

2. The semiconductor device of Claim 1,

wherein said third metal film is grown by plating.

3. The semiconductor device of Claim 1,

wherein said second metal film and said third metal film are made from the same kind of metal.

4. The semiconductor device of Claim 1,

wherein said second metal film and said third metal film are made from a metal including copper as a principal constituent,

said third metal film is grown by plating, and

no adhesive layer is formed between said second metal film and said third metal film.

5. The semiconductor device of Claim 1,

wherein an air gap is formed between said metal

interconnects in said interlayer insulating film.

6. The semiconductor device of Claim 1,

wherein said first metal film composing said metal interconnects has interconnect resistance substantially 1/5 or less of interconnect resistance of said second metal film composing said metal interconnects.

7. The semiconductor device of Claim 1,

wherein said first metal film composing said metal interconnects has interconnect resistance substantially equivalent to interconnect resistance of said second metal film composing said metal interconnects.

8. A method for fabricating a semiconductor device comprising the steps of:

depositing a first metal film on a semiconductor substrate with an insulating film sandwiched therebetween;

depositing a second metal film on said first metal film;

forming an interlayer insulating film on said second metal film;

forming a via hole in said interlayer insulating film so as to expose said second metal film within said via hole;

forming a plug of a third metal film selectively grown on said second metal film within said via hole;

forming a patterned interlayer insulating film by patterning said interlayer insulating film into the shape of

interconnects; and

forming metal interconnects from a multi-layer film composed of said first metal film and said second metal film by etching said multi-layer film with said plug and said patterned interlayer insulating film used as a mask.

9. The method for fabricating a semiconductor device of Claim 8,

wherein said third metal film is grown by plating.

10. The method for fabricating a semiconductor device of Claim 8,

wherein said second metal film and said third metal film are made from the same type of metal.

11. The method for fabricating a semiconductor device of Claim 8,

wherein said second metal film and said third metal film are made from a metal including copper as a principal constituent, and

said third metal film is grown by plating on said second metal film with no adhesive layer sandwiched therebetween.